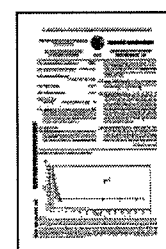


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Kind: **A2** INTERNATIONAL APPLICATION PUBLISHED WITHOUT INTERNATIONAL SEARCH REPORT or INTERNATIONAL APPLICATION PUBLISHED WITH DECLARATION UNDER ARTICLE 17 (2) (A) <sup>1</sup> (See also: [WO0236230A3](#), [WO0236230C2](#) )Inventor: **ALLCOCK, Harry, R.**; 434 Kemmerer Road, State College, PA 16801, United States of America  
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[News, Profiles, Stocks and More about this company](#)Published / Filed: **2002-05-10** / 2001-11-01Application Number: **WO2001US0045723**IPC Code: Advanced: **B01D 67/00**; **B01D 69/02**; **B01D 69/14**; **B01D 71/44**; **B01J 20/28**;  
Core: **B01D 69/00**; **B01D 71/00**; more...  
IPC-7: **B01D**;ECLA Code: **B01D67/00R14**; B01D67/00H10F; B01D69/02; B01D69/14B; B01D71/44; B01J20/28; L01J20/28D4;Priority Number: 2000-11-01 **US2000000245092P**Abstract: A pore plugging material, for pH dependent membrane diffusion, in which cyclic olefins having phosphazene-functional moieties provide predictable erosion properties when used to plug pores is separation barriers and other porous membranes. Specific properties of the polymers are dependent on several factors, including molecular weight and identity of side groups attached to the phosphazene moiety. However, as a class, phosphazene-functional cyclic olefins provide both predictable erodibility and uniformly benign hydrolysis products and are, therefore, uniquely suitable as pore plugging polymers for separation barriers and membranes of all kinds. The invention, therefore, embraces the provision of a pH-sensitive erodible pore plugging material to pores in separation barriers and membranes of all kinds. [\[French\]](#)[High Resolution](#)[Low Resolution](#)**16 pages**

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+ pH DEPENDENT MEMBRANE DIFFUSION

+ BACKGROUND OF THE INVENTION

1. Field of the Invention

+ SUMMARY OF THE INVENTION

In order to meet this need, the present invention is a pore plugging 15 material, for pH dependent membrane diffusion, in which cyclic olefins having phosphazene-functional moieties provide predictable erosion properties when used to plug pores in separation barriers and other porous membranes. Specific properties of the polymers are dependent on several factors, including molecular weight and identity of side groups attached to the phosphazene moiety. However, as a class, 20 phosphazene-functional cyclic olefins provide both predictable erodibility and uniformly benign hydrolysis products and are, therefore, uniquely suitable as pore plugging polymers for separation barriers and membranes of all kinds. The invention, therefore, embraces the provision of a pH- sensitive erodible pore plugging material to pores in separation barriers and membranes of all kinds.

+ Brief Description of the Drawings

Fig. 1 is a line drawing of an exemplary chemical compound and an <sup>1</sup>H NMR spectrum for a phosphazene-functional cyclic olefin pore plugging material according to the present invention; 5 Fig. 2 is an <sup>1</sup>H NMR spectrum (13.0 ppm) showing that upon deprotection of the compound illustrated in Fig. 1, acid groups appear and propyl groups disappear; and Figs. 3A and 3B are line graphs showing representative data for the effect of pH on the opening of gated pores prepared according to the following 10 description.

+ DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is a pore plugging material, for pH dependent membrane diffusion, in which cyclic olefins having phosphazene- functional moieties provide predictable erosion properties when used to plug pores in separation barriers 15 and other porous membranes. Specific properties of the polymers are dependent on several factors, including molecular weight and identity of side groups attached to the phosphazene moiety. However, as a class, phosphazene-functional cyclic olefins, provide both predictable erodibility and uniformly benign hydrolysis products and are, therefore, uniquely suitable as pore plugging polymers for separation barriers and 20 membranes of all kinds.

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